

**POTENTIAL IMPACT OF THE WITHDRAWAL OF 14 SEATER MATATUS
IN NAIROBI COUNTY**

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DECLARATION

Declaration by candidate

This project is my original work and has not been presented for approval in any other University.

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This research project has been submitted for examination for the Degree of Masters of Arts. Transport Geography, of the University of Nairobi with our approval as candidate's supervisors.

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DEDICATION

To my mum and Dad, my sisters and close relatives. Your love and support knows no limit. Thank you for believing in me, for always being by my side and for supporting me in every kind of way. I would not have come this far without you, and for this, I am eternally grateful to you all.

God bless you.

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May the Good Lord bless you.

ABSTRACT

The clamour for the phasing out of 14-seater matatus has become increasingly important with the increase of congestion in the city. The City of Nairobi is extremely congested which can be seen from the incessant traffic jams. Introduction of the 25 seater matatus is biggest step taken by the government to reduce congestion, pollution and traffic jams due to their higher capacity. This brought the need to further investigate on the benefits that awaits the residents and the future vision of greater transport solutions in the daily lives of the city's residents who use transport in a daily basis. The general objective of the study was to examine the potential impact of the withdrawal of 14 seater matatus in Nairobi County. The specific objectives of the study were to establish the influence of the withdrawal of 14 seater on the decongestion of the matatus, to examine the road subsector and its goals to improve the transport sector and to investigate the impact of the introduction higher capacity vehicles. This research was descriptive in nature and was carried out using a case study design. The study's target population was the operators who operate the matatu for transportation services, they are directly involved in managing transport in Nairobi County daily. The study utilized convenience sampling in coming up with a sample size of 120 respondents. The research used questionnaires as a research instrument that was administered to the matatu operators who operated to the Central Business Department on a daily basis using the 14 seater matatus. The research assistants filled in the questionnaires as the operators answered them. Data collected was subjected to quantitative analysis. Interpretations, inferences and conclusions were finally made based on the analysed data. The study found that the projects that should be prioritized in the area include regular maintenance of roads by roads sub sectors, expansion of public roads in Nairobi, licensing board to improve their services and improvement of security on the roads. The study therefore established that the withdrawal of the 14 Seater Matatus would lead to unemployment, reduction of road accidents, better security and insurance of vehicles through Sacco and less congestion. The study also established that the reforms will reduce road accidents; others indicated that it would create employment, while others indicated that transport sector will be more organized. The reforms of the road sub sectors will also help build the transport vision in Nairobi. The study recommends that there is that the licensing of the PSV vehicles should be harmonized and managed by one body to avoid fraud and phase out the many institutions purporting to offer licensing. Further, it is important to give comprehensive training to the traffic police and ensure effective transfer of the skills acquired in their work which should be complemented with better remuneration. It is also recommended that the traffic police officers should be separated from those who are perceived to be corrupt and they be transferred to other major institutions which deals with the PSV services. The study also recommends that the Matatus owners and their staff should be involved in the discussions and decisions in their industry by strengthening their capacity in order for them to ensure that the industry is well managed. The relevant authorities and stakeholders should focus on ensuring that there is improvement on the terms and conditions under which the employee's work through collective ownership of the functions of the industry and operations of the PSV.

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OPERATIONAL DEFINITIONS

Terms that will commonly be used in this project report are defined below as they will operationally apply in the study

1. **Nairobi Central Business District:** A county in Kenya and also the capital city.
2. **Public Transport:** Buses, “matatus” and taxis moving people for monetary gains opposed to private vehicles.
3. **Bus:** A bus can be defined as a large passenger vehicle which is either privately or publicly owned and carries a about 60 or more passengers.
4. **Commuter:** A person utilizing public transport facilities or journeying to and from a place every day.
5. **Operators:** Persons working and giving commuters service in the vehicle they are the driver and the conductor.
6. **Congestion:** The overloading or overcrowding of persons in a public transport vehicle.
7. **High Capacity Vehicles:** Vehicles that carry more than 25 people.
8. **Transport Licensing Board (TLB):** A government body that is charged with the role of registering and licensing all motor vehicles in Kenya.
9. **Bus Rapid Transit:** A mass transit vehicle that provides affordable, comfy and fast movement in urban areas as a formal means of transport mainly in urban areas or inter-cities transport with higher capacities.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The major challenge facing rapidly urbanizing areas of the developing countries such as Kenya is providing affordable and adequate public transport. As a result, private cars and low capacity public transport vehicles such as the matatus have emerged and clogged the streets of developing cities. Congestion, pollution and overcrowding have become major transport problems experienced daily in our cities. Some local authorities in metropolitan area such as Bogota in Colombia and Sao Paolo in Brazil have created public transport stratagems geared at improving public transport and also controlling congestion, overcrowding and pollution. The City County of Nairobi also had a long term vision of withdrawing low capacity public transport vehicles and replace them with higher capacity ones. This vision entailed withdrawing the 14 seater matatus from operating in the City by replacing them with 25 seater matatus or buses. Large cities in South America like Bogota and Curitiba have been recognized as having the most affordable and successful public transport systems in the world. Curitiba and Bogota have created affordable and superior public transport systems (Pienaar, et al, 2017). It is believed that City fathers of the Nairobi City County can learn valuable lessons from the South American experience.

Public transport in Nairobi and particularly in urban towns in Kenya is ruled by Matatu vehicles. The word Matatu is gotten from the Kikuyu vernacular, term mang'otore Matatu which signifies" thirty pennies" which was then the standardized fare for each matatu trip made (Aduwo, 1990).The sources of Matatu industry can be followed from the kind of transport framework that worked in towns in the mid1960s. At first, the Kenya Bus Service was in existence 1934 as the single legitimate supplier of open transport administrations (Aduwo, 1972). By 1990, of the 333,300 vehicles enlisted in the nation, 17,600 were Matatus. By 2003, the quantity of Matatus working in both urban and country regions was assessed at 40,000. They contained Nissans, smaller than usual transports and pickups (Asingo, 2004).

In the beginning of 1960, there were about 400 matatus and taxis operating in the whole of Kenya. In response to lobbying by those operating matatus, the president

issued a declaration that matatus were a legitimate mode of transport in the year 1973. This meant that they could ferry passengers and charge them fares without acquiring special licenses, however, they were required to adhere to the traffic regulations and insurance rules (Aduwo, 1992; Mutongi, 2006).

They were working wrongfully in the city until 1973, when they were issued with an announcement formally perceiving matatus as a legitimate method of public transport. The announcement permitted matatus to work without acquiring any type of authorization (Mutongi, 2006). The fundamental thought was to increase and create versatile ways of individuals to move proficiently and create more occupations in the casual sector (Kimani et al, 2004). Because of popularity, the quantity of matatus expanded. They gave work to about 160,000 people and produced huge income for the Kenyan government through various taxes such as VAT, licenses and other levies. What's more, the industry has a main impact in transportation of people and merchandise in both provincial and urban regions.

1.1.1 Seater Matatus in Kenya

Matatus do comprise the 14 seater transport systems that operate within the country. They play an essential and key part in Kenya's vehicle framework. For the suburbanites and administrators, traffic congestion is a central issue as it leads to a lot of time wastage to get to the city. Traffic jams can straightforwardly prompt expanded security issues for those held up in traffic, presenting them to potential wrongdoing dangers and exposing them to serious health risks. One study evaluated that time spent on commuting because of expanding traffic jams is around Ksh 1.89 billion every year (NMGS, 2006). Many accuse the Transport Licensing Board (TLB) for the jam in Nairobi, seeing that the Board keeps dispensing PSV licenses, basically to guarantee income for the legislature. Accordingly, the streets are full of Matatus. Note that it is the role of the TLB to give out licenses and it has no authority to change the current authorizing strategies.

Acquiring a Matatu and recouping beginning expenses is a worry for proprietors. This can be at first troublesome however broad desire is that a sizable benefit can be acknowledged in a moderately brief time. Planned proprietors know new vehicles are delivered and accessible locally yet they are excessively costly, making it impossible to buy (Ombati, Opiyo and Gikandi, 2009). Fuel, remuneration and protection are the

most costly expenses for proprietors so to guarantee that expenses are recuperated, proprietors set an objective for every day benefit in this manner urging matatus groups to stuff and speed. The push to eliminate 14-seater matatus is turning into an inexorably essential subject. For the Matatu proprietors and drivers, there are two fundamental concerns: the pace at which the 14-seater matatu will be eliminated and their capacity to move up to a higher limit vehicle with next to zero pay or help.

Fourteen-seater vans account for about 70 per cent of the vehicles in the public transport sector and their gradual phase out is expected to create demand for buses, benefiting CMC Motors, General Motors, and Marshalls that are major players in the new bus market. The elimination of the 14-seater matatus postures worries for a few suburbanites since the 14-seaters fill up faster , creating faster commute times and evading traffic faster than big buses. Registration of 14 seater vans has been banned since January year 2011, a move that is forcing investors to buy higher capacity buses to expand their fleet.

The clamour to eliminate 14 seater matatus has become a very important topic in Kenya. Introduction of the 25 seater matatu is biggest step of the both the government and the Ministry of Roads in Kenya. The eliminating of the 14 seater matatus is believed to help a great deal in Kenya's transport vision which is to enhance a sufficient mode and methods of transport which will be more comfortable for the citizens. This brought the need to further investigate on the benefits that awaits the residents and the future vision of greater transport solutions in the day to day lives of the people who use transport in a daily basis.

1.2 Statement of the Problem

In previous sections, it has been emphasised that urban public transport in developing cities is inadequate and this poses serious problems of mobility and inaccessibility. It should be emphasised here that inadequate public transport severely hampers mobility and accessibility thereby impacting social and economic activities. It would be difficult to access schools, hospitals, recreational places and even jobs. Increasing pollution resulting from petrol driven private cars lead to serious pollution problems which are likely to negatively impact on public health. There is also possibility of increased traffic accidents and the emission of green house gasses which are thought to increase the rate of global warming. In this connection, cities in

developing countries with Nairobi included have to re-think their present and future transport systems to make them sustainable (O'Neill, 2017).

In the years 2002/3, the legislature embraced two measures to adjust the circumstance through the street sub-part changes. In the first place, it built up the coordinated national transport strategy and furthermore, it presented changes in the operation of PSVs. These severe rules were for the reasons for decreasing accidents, improving security of commuters, guaranteeing duty, responsibility and skill of drivers and conductors. They likewise went for taking out unlawful drivers, conductors and offenders that had invaded the business and encouraging the distinguishing proof of vehicles and limiting their operation to approved routes.

The new directions had awesome diminishment in the quantity of individuals killed and harmed in accidents. Because of careless requirement after the underlying push the quantity of deaths in accidents has expanded as of late. Further, these reforms proposed the replacement of 14 seater matatus with higher capacity 29 seater vehicles which carry more passengers so as to ease congestion. This easement of congestion is intended to reduce traffic jams, pollution and congestion in the Nairobi county. While studies have been done on these reforms, their application and implementation, there have been no studies on the impact of these reforms in the city. This is the gap that this study wants to fill by answering the following question: what is the impact of the withdrawal of 14 seater matatus in Nairobi County?

1.3 Research Questions

This study sought to answer the following questions:

- i. How will the removal of the 14 seater matatus help in traffic decongestion in Nairobi County?
- ii. What is the influence of Road Sub Sector reforms on traffic decongestion in Nairobi County?
- iii. What will be the impact of the replacement of 14 seater matatus with higher capacity 29 seater vehicles on traffic decongestion in Nairobi County?

1.4 Research Objectives

The general objective of this study was to examine the impact of the withdrawal of 14 seater matatus in Nairobi County.

1.4.1 Specific Objectives

- i. To find out how the removal of the 14 seater matatus would help in traffic decongestion in the city Nairobi City County.
- ii. To examine the influence of the Road Sub Sector reforms on traffic decongestion in Nairobi County.
- iii. To investigate the impact of the replacement of 14 seater matatus with higher capacity 29 seater vehicles on traffic decongestion in Nairobi County.

1.5 Justification

The findings of this research will form a basis for future research on the field of transport geography. Further, the results of this study will provide important information to the government and the Nairobi City County administration on how to manage congestion in the city. Additionally, the results of this study will be instrumental in the policy making process on the transport network of the city and in future decongestion efforts. Lastly, the results of this research will be helpful to those in the Matatu industry as they will help them learn how to better manage their fleets and thus be more profitable.

1.6 Scope and Limitation

The study covered the whole of Nairobi County. The focus of the research interest was the urban transport system. The study limited itself to the routes that access the city centre directly. Additionally, it focused on the Matatu drivers and conductors on the sampled routes. The study was limited by the descriptive nature of the study and the researcher reassured the respondents of their confidentiality and anonymity so as to encourage honest responses.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter focused mainly on the past researches that have been done which are relevant to this research study the impact of the withdrawal of 14 seater matatus in Nairobi County. The chapter explored relevant information from the past research so as to narrow the gaps within the existing literature, methodologies and past findings with the aim of filling them up.

Kenya is currently completely subject to matatus with regards to transport and can't manage without them. A few investigations have been completed on matatus as a method of transport. The investigations have principally moved in the city of Nairobi. This chapter will therefore try to establish pertinent information about what has been done and what has not been done and what needs to be done. This will help in gaining a better understanding of this research under study in terms of the theoretical and empirical literature. The results of this study will create means for updating the available literature to suit the current situation. Throughout history, the duty of transportation in the expansion procedure has been, and it continues to be critical to the development of social and economic, and other strategic needs (Ogonda, 1976). The review of literature for this study will focus on the impact of the withdrawal of 14 seater matatus in Nairobi County.

2.1 Transport in other countries

2.1.1 Public Transport in Netherlands

The fundamental open transport in the Netherlands for long distances is via train. Long- distance transports are restricted to a couple of missing railroad associations. Provincial and neighbourhood transport is by bus and in a few urban communities by metro and cable car. Likewise there are ships. There are 19 open transport experts in the Netherlands: the Service of Framework and The earth, OV-department Groningen Drenthe (OVBGD), each of the 10 different areas, Stadsregio Arnhem Nijmegen, Bestuur Regio Utrecht (BRU), Stadsregio Amsterdam, RegioTwente, StadsgewestHaaglanden, Stadsregio Rotterdam (SRR), and Samenwerkingsverb and

Regio Eindhoven (SRE). In the Netherlands, before the year 2000, nearby and provincial open transport was generally in light of the rule of market activity yet moved accepted bit by bit far from that standard, giving an awesome level of soundness to occupant administrators, which were for the most part specialist possessed (Velde & Leijenaar, 2001).

Despite the fact that it was legitimately feasible for the new section from private administrators, it infrequently occurred practically speaking. A noteworthy advancement in the Dutch open transport as of late was the presentation of the new Traveler Transport Act 2000. This present change's point was twofold: more alluring open transport administrations (particularly in regions most exceedingly bad hit by blockage) and a change in cost recuperation proportions (Velde, 2001). This demonstration decentralized the forces to common and territorial specialists, and bit by bit presented the focused offering of open transport administrations for concessions. Furthermore, the demonstration expressed that specialist possessed nearby transport organizations were to be put at a manageable distance or privatized. The procedure of change was set to be finished by the year 2006. In an early appraisal of this change, Hermans and Stoelinga (2003) considered effects of the change as far as administration level, support, and cost productivity. The positive outcomes are an expansion in benefit level and support, and cost effectiveness while a few obstructions still remain.

2.1.2 Transport in France

Public transport in France is provided by RATP. RATP (La Régie autonome des transports parisiens) network provides bus with 353 mesh in Paris and its suburbs. This is meant to advance the superiority of amenity offered to passengers as a priority on congested urban roads and often disturbed sites and events. Major investments are happening to advance the user-friendliness, luxury and vigour sobriety of the convoy. All vehicles are equipped with a system announcement. Visual information board is being spread. The network has since January 2009 6500 terminal passenger information (BIV) installed on 12,000 breakpoints functional (BIV same equipment provides several lines). These BIV can know in real time the waiting period for the next two buses. These 12,000 breakpoints also have Flashcode technology (Link) that allows the same material to be delivered and deciphered by all technically attuned

mobile phones. The traveler has the opportunity to view, anywhere, transit schedules the next two bus or tram to better prepare its movement. RATP explores alternatives to traditional fuels sectors to strengthen its convoy with fuel-saving vehicles and less contaminating hybrid vehicles, biofuels, CNG, LPG. It launched in 2009 a tender for the purchase of hybrid buses (electric and diesel) standard and articulated after testing several models series.

The modernization of the fleet also strengthens the quality of service and comfort climate and improve accessibility of More than 13,000 of the 45,000 employees of the RATP bus drivers. Their quantity is growing owing to the growth policy of the offer followed by the needs of the RATP totaled 2,000 new bus drivers in 2009 included training contracts, as in 2008. A B permit for any degree just to apply. Tests and interviews to verify the candidate's ability to drive a bus in all situations, his ability to stay focused, to behave responsibility and safety. The 13,000 bus drivers RATP have defined a "repository of attitudes" to observe in the customer relationship. This repository adapted to their profession and their environment has been developed within the framework of working groups involving officers and members of management.

Security and quality of service of a multimodal public transport demand full equipment availability and rapid response capacity on the network. This implies impeccable maintenance and a vision of its economic issues. With more than 10,000 employees and more than one billion annual budget, maintenance is one of the strengths of the RATP and a center of excellence and expertise exceptional around the world. More than 50 local workshops maintain constant 5000 subway cars and train more than 5000 buses and hundreds of trams. All maintenance teams have the same priorities: security, service continuity and accessibility of facilities. The npromises involve ongoing care of thousands of kilometers of metros and RER thousands of escalators and distributors of tickets.

2.1.3 Transport in Germany

As a thickly populated nation in a focal area in Europe and with a created economy, Germany has a thick and present day transport foundation. The primary highway framework to have been created, the broad German Expressway has no speed restrain for light vehicles (albeit posted speed limits are in constrain in many areas today, and

there is a sweeping 80 km/h confine for trucks). Germany has around 650,000 km of streets, of which 231,000 km are non-neighborhood streets. The network is broadly utilized with almost 2 trillion kilometers went via auto in 2005, in contrast with only 70 billion km went by rail and 35 billion km went via plane. Almost every town and numerous country zones have booked neighborhood transport benefit. In bigger towns and urban areas, lines jumble the city (Robincheck and Myers, 1966; Swamp, 1982). Where nearby rail benefit is offered, transports supplement those administrations. In the greatest urban areas, there might be a few distinctive transport frameworks in operation. In Berlin, you'll even discover twofold decker transports. Administration interims change broadly relying upon the area and time. Numerous extensive urban communities likewise offer night transport benefit. In a few spots, particularly littler towns, transport benefit is worked by German Rail (Bahnbus). Most medium and expansive urban areas have a streetcar (cable car) framework, some of the time genuinely broad. In a few zones, streetcar lines run underground in the focal city zone. Cable cars are particularly common in numerous eastern German urban areas. Most frameworks have been modernized with smooth new moving stock and numerous frameworks now convey the Trambahn moniker. Administration is genuinely visit, for the most part 20-30 minutes amid off-peak periods.

In every city or metropolitan territory, the majority of the travel systems work under a solitary territorial transport agreeable (Verkehrsverbund) with composed admissions and tickets. A solitary ticket (Fahrkarte, Fahrschein, or Fahrausweis) is useful for all methods of transport and is substantial for exchanges to different prepares or transports expected to finish your trip. The particular principles fluctuate contingent upon the city, however most frameworks permit you one finish trip one ceaseless way along the most direct course to your goal for a set time span, typically two hours or thereabouts, including any exchanges and interruptions. Fares on German transport systems depend on a zone framework (Robincheck & Myers, 1966; Swamp, 1982). The vehicle locales are isolated into tax zones (Tarifzonen) and you pay in view of the quantity of zones you cross. As a rule, there is a focal group of zones (Innenraum) covering the internal city. Normally, all tickets acquired in this group have a similar cost for ventures finishing anyplace else in the bunch, regardless of whether it crosses a tax zone. Tolls by and large range from €1-4; higher for longer separations. For transports, you can buy your ticket from the driver. Just express your last goal and he

will disclose to you how much the charge is. Pay him and he will give you your ticket. In most German urban areas, the driver can roll out improvement; however it's presumably a smart thought to have enough change close by to pay the correct admission. On the off chance that there is a ticket machine at the transport stop, you should buy your ticket from the machine instead of the driver. In a few spots, there are ticket machines on-load up transports and cable cars; you'll have to buy your ticket from one of these machines promptly subsequent to loading up.

2.2 14 Seater Matatus and Congestion in Nairobi County

For the workers and administrators, traffic jam is a central issue as it requires an irrational measure of investment to get to the city. Traffic jams can specifically prompt expanded security issues for workers stuck in traffic, presenting them to potential wrongdoing dangers and making difficult issues with respect to wellbeing crises. One examination assessed that time spent on go because of expanding blockage is roughly Ksh 1.89 billion every year (NMGS, 2006). Many accuse the TLB for the traffic jams in Nairobi, seeing that the Board keeps distributing PSV licenses, just to guarantee income for the administration. Accordingly, the streets are soaked with open administration vehicles. Note that it is the command of the TLB to issue licenses. The TLB has no authority to change the current permitting strategies.

Given the number of inhabitants in the Nairobi Metropolitan Region, and its political, social and financial significance, it is basic to have an open transportation framework set up that can sufficiently serve the city and its occupants (Mutongi, 2006). He additionally expresses that having a solid arrangement or vision that portrays how the city ought to create and the part transport will play in serving the city is fundamental. On the off chance that this is done, when partners in the vehicle business are tended to and discourses result in regards to their part later on transport design, they will have a comment on and an arrangement to counsel (Khayesi, 1999). In the different plans that have been proposed, matatus are not specified or figured into the vehicle design. While my examination and meetings recommend that BRT could fulfill the city's vehicle needs any future advances in regards to an extensive travel framework ought to talk about matatus, considering protection will be unavoidable with the taxi protection in South Africa being a prime illustration.

It is imperative to clarify that the matatus will in any case play a basic (yet modified) part in the travel business and that they are being supplanted by the greater ones. The way to influencing it to capacity will be to utilize a recipe to make a BRT framework that is remarkably and particularly Kenyan. Matatus ought to be incorporated somehow, regardless of what the primary mode is, whether it is transport or rail (Ogonda, 1992). Aduwo (1990) investigates the ramifications of the professional privatization and star deregulation perspective of improvement policymakers and organizers that has ruled dialogs of urban administrations for urban communities in the Worldwide South amid the last quarter century. They did that through an investigation into the test of making present day urban open transport for Nairobi Kenya.

Managing congestions on the roads is another vital part of transport policies. A procedure must be produced on both monetary and natural grounds to manage expanding clog. Expanded portability, especially private mechanized versatility, normally increments measured Gross domestic product yet harms the earth (Mutongi, 2006). The institution of an exhaustive transport framework is basic to successfully address the large number of issues caused by and related with quick urbanization. This framework should likewise fit into a vehicle arrange for that joins Nairobi and different urban communities, which are additionally feeling the unforgiving effects of fast urbanization.

Measures to decrease the need to set out and to pull sought after to different methods of transport must be considered in the more extensive way to deal with a coordinated transport strategy. As a rapid measure, the government of Kenya forced a regulation banning the import and registration of 14 seater Matatu vehicles in the Country. This regulation has taken effect from January 2011. As a consequence, the stakeholders in the transport sector have taken some strategic responses to cope and adapt with this change in the transport system. There is no doubt that any adjustment in the vehicle framework is met with protection, particularly when those progressions specifically affect the Matatu business. It is additionally sure that any change period to another framework will be troublesome for Matatu proprietors and Matatu teams. The stakeholders in the transport sector have adopted various strategic responses towards the ban of 14 seater Matatus (Ogonda, 1992).

Government authorities say quick changes are important to forestall street blockage and bloodletting on Nairobi boulevards. The administration has quite recently found a way to eliminate the 14-seater open transport vehicles that have routinely fizzled security checks and are regularly stuffed. In 2004, road rules known as the Michuki Rules required all transport vehicles be fitted with seat belts and mandated new speed requirements. But these laws are rarely followed these days. Officials have determined that the 14-seater "matatus" are the most notorious rule breakers, so the Transport Licensing Board has stopped issuing licenses for them and has begun to pull offending vehicles out of operation (Ogonda, 1992). For the suburbanites and administrators, traffic jams is a central issue as it requires an outlandish measure of investment to get to the city. Traffic jams can specifically prompt expanded security issues for suburbanites stuck in activity, presenting them to potential wrongdoing dangers and making major issues with respect to wellbeing crises. One investigation assessed that time spent on set out because of expanding clog is around Ksh 1.89 billion every year (NMGS, 2006).

Irandu, (1988) recognizes the importance of minimizing the problem of increased demand without a corresponding increase in transport services. He notes that bus services are insufficient and undependable while congestion is common in available buses. According to the author one of the most controversial problem facing urban areas in the developing countries is the provision of appropriate system of mass transit capable of satisfying the increasing needs for the transportation of people, where buses and other forms of public transport are inadequate.

2.3 Shifting to Higher Capacity Vehicles and Congestion in Nairobi County

According to Ogonda (1992) "the fairly elected authorities of every SACCO should grasp the part of arranging matatu proprietors of 14-seater matatus into bunches that can buy high capacity vehicles. There is a program offered from General Motor East Africa (GMEA) to back higher limit vehicles and the SACCOs should work with GMEA straightforwardly, conceivably through workshops to direct the speculators en route. The SACCOs could likewise seek the MOA for help and guidance, as there are cases inside the MOA of how to make such a change. (Ogonda, 1992) It is important that not all courses may need to make this move to higher inhabitation vehicles. In regions where it is troublesome for bulkier and bigger vehicles to explore, it might be

fitting to have littler vehicles work the course. Through these two moves, the matatus can start to position themselves with the goal that they can be a solid and composed industry seen as an important segment to a bigger more far reaching mass travel framework that can benefit the whole metropolitan zone, including satellite urban areas” (Khayesi, 1999).

It is important that not all courses may need to make this move to higher inhabitancy vehicles. In territories where it is troublesome for bulkier and bigger vehicles to explore, it might be proper to have littler vehicles work the course. Through these two moves, the matatus can start to position themselves so they can be a solid and composed industry seen as a fundamental segment to a bigger more exhaustive mass travel framework that can benefit the whole metropolitan territory, including satellite urban areas.

Ogonda (1992) states that in 1973, Nairobi Metropolitan Development Methodology was figured and gave the improvement bearings of land utilize and transport framework for Nairobi City (NCC); No nitty gritty arrangement and update has been performed from that point forward. Urban structure issues including high populace development (3.9%) and urbanization (7-8%). There is likewise concentric urban structure with outspread transport hallways in the Nairobi Metropolitan Range. Another auxiliary test is the grouping of work puts in Nairobi City. Hardened rivalry for restricted street space including few pressing spaces the greater part of the space in the downtown area is used as one major auto stopping zone and the streets lose their capacity as a vehicle office. The majority of the on-street parking spot is involved by the suburbanites' private autos. The vehicle issue can be diminished incredibly if the 14 seater matatu is supplanted with the 25 seater matatu which is a more noteworthy exertion in decreasing the blockage in the city (Lee Smith, 1989).

2.4 Roads Sub Sector Reforms and Congestion in Nairobi County

The roads sub-sector reform process started in the mid-nineties in accordance with Sub-Saharan Road Support Activity (RMI). The real change accomplishments incorporate; the foundation of the Street Upkeep Impose Reserve (RMLF) in 1993 to guarantee a maintainable wellspring of support assets and foundation of the Kenya Streets Board Expert (KRB) in 1999 to isolate the parts of financing and usage. KRB focuses on subsidizing upkeep of all streets including endorsement of support work

program, specialized and money related reviews of works it reserves. In 2005, the administration started ventures to build up a Movement Administration Specialist (TMA) for dealing with the overwhelming activity clog experienced in Nairobi City. The primary focus of the Authority was to develop mass transit for Nairobi Metropolitan Area, increase capacity and operation, land use planning, traffic demand and capacity building in traffic engineering. Provision of public infrastructure between urban and rural services is a critical management tool. Enhanced spatial linkages affect the development of products, individuals and capital

Access to agrarian help exercises and social administrations gets enhanced and could likewise be shared among towns found near each other. Better availability of towns to urban zones and enhanced social administrations pull vagrants to get in contact much of the time. Advancement of framework and administrations ought to be in supplement with the arrangements as expressed before to keep the unfavourable impacts of availability from happening. In 2007, Roads 2000 Strategic Plan was launched with a dual purpose of improving road infrastructure condition and employment generation for it uses labour-based contracting.

Some of the emerging lessons in urban management in roads sub-sector worthy of noting and recommended for replication in cities in developing countries with similar characteristics like Kenya include;

- a) Adopting good governance principles, accountability, transparency, and social responsibility by the local authority that empower the local communities,
- b) Integrating strategic planning, budgeting and implementation to promote prioritized actions through consensus of all stakeholders within the communities,
- c) Introduction of public private partnerships for efficient provision, delivery of basic services and traffic management,
- d) Introduction of innovative human resources management like; performance contracts, urban pacts and service charters,
- e) Formulation of City's vision and mission to chart development road map to meet citizens' changing needs, aspirations and prudent use of available resources without compromising needs of future generations and

- f) Encouraging establishment of inter-ministerial, inter-government and inter-donor coordination in the development agenda.

The enactment of Kenya Roads Act, 2007 will enhance the efficient implementation of the road sub-sector reforms. These authorities will be under the Ministry of Roads. KURA is the authority under which the City Council of Nairobi will be operating and implementing these road reforms. Along these lines the Urban Streets Expert will be in charge of the administration, improvement, restoration and support of every open street in the city with the exception of the national streets. The classes of streets under KURA incorporate; arterials, urban gatherers including essential wholesalers and urban nearby streets.

The formation of a far reaching transport framework for Nairobi is basic if the city tries to adequately address the huge number of issues caused by and related with quick urbanization. This framework should likewise fit into a bigger metropolitan transport arrange for that consolidates Nairobi's satellite urban areas, which are additionally feeling the brutal effects of quick urbanization. To do this, it is important to comprehend the different systems and ventures that contain the present travel framework. Understanding the system that exemplifies the matatu business and making discourse that can enable the business to assume a proceeded with part in the travel division, is a critical advance in making a metropolitan transport framework that coordinates instead of distances the matatu business.

2.5 Empirical review

Peters (1993) carried out a study on the maritime transport crisis in Venezuela and noticed that the Venezuelan payload shipping division had seen a lessening in the quantity of speculation to the part attributable to the expansion in delivery costs by 30 for every penny which most speculators thought would fundamentally influence their benefits. With the high exchange expenses of making markets for some foundation, (for example, urban and country streets) combined with the vital and distributional outcomes of the nonattendance of viable markets, governments should likewise keep on being in charge of basic, financial and speculation arranging. Such activity will see the vast majority of the expenses brought about decreased at the support of generally financial specialists.

An examination by Heseltine and Silcock (1990) in America because of deregulation of transport costs found that lessening the vehicle tolls at bring down levels with the point of giving reasonable passages to the poor without diminishing the expenses too prompted decay of vehicle armadas and also a decrease in the quantity of the vehicles. A decrease in both the admissions and the expenses or an expansion in the charges was however found to have the option comes about prompting a conclusion that venture was just positive when productivity was ensured.

An investigation done by Wright and Thiriez (1987) on transport benefits in Africa noticed that the controls that draw in financial specialists ought to likewise posture almost no constraints to new participants. Directions “that will make it troublesome for new participants to enter the matter of open transport will see some potential financial specialists being bolted out. They additionally contend that strict passage directions prohibits or restricts odds of giving creative types of ease transport that can provide food for transport needs of poorer natives. It additionally restricts the options of higher quality to those eager to pay for such. Despite the fact that they stress that the directions ought not pod new contestants, it is additionally significant that when the supply is high costs will positively be low accordingly speculators are probably going to get low profits for their ventures in this manner withdrawal. This in this manner implies that as much as the accessible directions ought to urge less obstacles to new participants to the market, it ought to likewise deal with the passages so the providers don't surpass the request.

Estache and de Rus (2000) did a study on the regulation of transport infrastructure in Africa and noticed that the Venezuelan load shipping division had seen a decrease in the quantity of speculation to the segment inferable from the expansion in transportation costs by 30 for each penny which most financial specialists thought would altogether influence their benefits. With the high exchange expenses of making markets for some foundation, (for example, urban and country streets) combined with the vital and distributional results of the nonattendance of viable markets, governments should likewise keep on being in charge of auxiliary, monetary and speculation arranging”. Such activity will see the vast majority of the expenses caused decreased at the support of generally financial specialists.

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Khayesi (1999) examined the monetary and administrative structure of the Matatu business in Kenya and characteristics the quick development in the quantity of Matatus on the Kenyan streets since 1973 to the capacity of the Matatus to guarantee bigger benefits in view of the administrators' underhanded method for expanding charges with claims that expenses have gone higher. Actually, Raballand and Macchi (2008) declare that “the climbing of admissions by Matatus isn't really to make gigantic benefits but instead to react to the high expenses entwined in people in general transport business. This may be considered as a powerless guard on the grounds that if charges are expanded to take care of the expanded costs, at that point it abandons say that the administrators don't need their benefits to be sliced to cover some portion of the expanding costs”. He expresses that "the presence of solid

intrigue bunches in the matatu segment (made of stage specialists, proprietors and different partners) halfway clarifies the standard savagery and clashes that happen in this industry".

2.6 Theoretical Framework

This section presents the theories that ground this study.

2.6.1 Government Regulation

According to Boyer and Michael (1976) "investigation of the change of social relations, which makes new structures both monetary and non-financial composed structures and the creating a determinate structure, the method of propagation. This hypothesis or approach takes a gander at entrepreneur economies as a component of social institutional frameworks and not similarly as government's part in the control of the economy, despite the fact that the last is the real piece of the approach. The above approach tries to put into point of view that an economy would be more proficient if there is nearness of directions administering foundations, for example, transport part. To be sure Thomas and Stomach (1981) Prophets of direction expounded on the railroad framework in the US in which it was apparent that when the government was in charge efficiencies were noted and the regular residents were not abused. In light of the above system, it is remarkable maybe that in the Kenyan setting on transport industry if the administration attracts approaches to manage the division and manufacture ability to implement the principles in every one of its features, more financial specialists' eventual pulled in to put resources into the business in this manner driving quality in benefit arrangement and lessening the cost".

2.6.2 Profit Maximization

According to Friedman who is an economist who was convinced of the presence of the invisible hand and continues to state that "There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud"(Milton, 1982). He also adds that "Most Organizations and associations' fundamental target is to make benefits and so far as that is concerned would work all the more proficiently and designate their assets in such a way, to the point that they boost the benefits collected.

Benefits are boosted at the point where the Peripheral Income is equivalent to the Minimal Cost. In light of the above hypothesis, the individual financial specialists would be pulled in to contribute on people in general transport to make benefit and augment it through efficiencies that would be made”.

2.6.3 Theory of Cartels

Individuals of a similar exchange from time to time get together, notwithstanding for cheerfulness and preoccupation, yet the discussion closes in an intrigue against people in general, or in some creation to raise costs. It is incomprehensible in reality to avert such gatherings, by any law which either could be executed, or would be steady with freedom and equity. Adam Smith, *The Abundance of Countries*, 1776. Cartels mean shared understandings between contending firms to control costs or avoid section of new contenders to a similar market. In the Kenyan setting cartels are described by bedlam and hooliganism that influences people in general transport industry straightforwardly. The present circumstance has seen this change look in type of SACCOS that one needs to subscribe to be permitted in specific courses which is commensurate to coercion of new participants.

2.7 Research Gaps

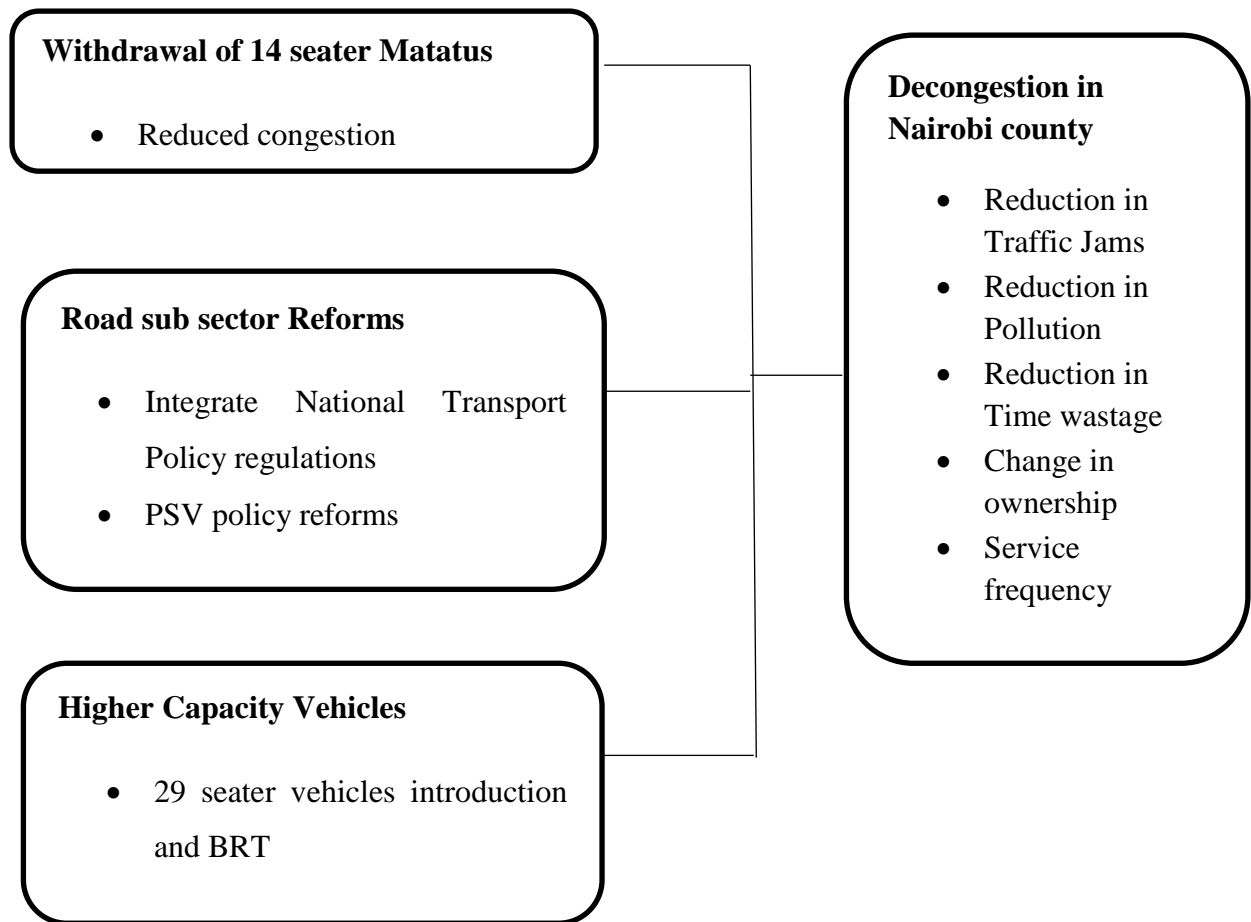
The literature from this bridged the gap. The reforms noted above demanded effective management of urban growth, change management and robust local capacity with inputs from central government, local government, private sector, partners and local communities.

2.8 The Conceptual Model

Figure 2.1 shows a theoretical flow chart of an efficient transport system. Transport is quite dynamic and is affected by several factors, government control and research studies done in order to point out areas of improvement on the transport system

Independent variable

Dependent Variable



2.9 Conclusion

The firms such as those in the transport sector in Kenya require both fiscal and non-fiscal evaluation to facilitate their performance in the sector especially with the ban of 14 seater Matatus. The available literature has investigated the strategies adopted by other firms in various other sectors. The operating environment of the transport sector in Kenya is however different from the operating environment in those other countries and, this deficiency coupled with the changes in technology as well as the effects of globalization motivate the current study to validate the existing literature as well as put forward an investigation based on a local context by investigating the influence of the government's rules on stakeholders' responses in the transport sector in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section outlines the methods and procedures that shall be applied when carrying out the study. It includes explanations on how the research is designed, who is the target population, the procedure that will be used to sample this population, how the data will be collected, the procedure that will be followed during data analysis and the techniques that will be applied.

3.2 Research Design

Research design is defined as the method that the researcher plans to use in order to get answers for the research questions that the study seeks to answer and to explain how the study pans to remedy any challenges that maybe encountered during the study period (Lavrakas, 2008). This study utilized a case study approach which involves in depth analysis of one unit so as to examine a specific phenomenon. This method is particularly useful since it allows the researcher to do a critical analysis of a particular unit of study.

3.3 Target Population

Borg, Gall, and Gall (2007) explain that is important for a study's target population to have characteristics which can be easily observed that the researcher can use to extrapolate the findings of the study. The study's target population was matatu operators (drivers, conductors and matatu Saccos) of the 361 matatu operators who operate the matatu for transportation services, who are directly dealing with the day to day transport management in Nairobi. The study focused on the following routes Thika Road, Mombasa road, Juja road, Jogoo road, Waiyaki Way and Ngong road.

3.4 Sample and Sample Procedure

A research sample was the people who actually participate in a study (KAPC, 2002). The sampling frame for the study was Matatu Owners Association database (2017). As given by the database, there are 361 matatu operators in Nairobi with 14 seater matatus. The study adopted the Mugenda and Mugenda (2003) and Kothari (2014) recommendations that the study sample size need to be between 10% and 30%. The

study therefore sampled 30% of the population (361) matatu owners, and the sample size was therefore 120 matatu operators.

3.4.1 Sampling Techniques

The study utilized convenience sampling in coming up with a sample size of 120 respondents. This method of sampling enables a researcher to use subjects that are easy to reach thus ensuring their convenience (Robson, 2002). This method of sampling is easy to use and it enables the researcher to access populations that would otherwise be inaccessible.

3.4.2 Sampling of Roads

The researcher focused on matatu workers in Thika Road, Mombasa road, Juja road, Jogoo road, Waiyaki Way and Ngong road. The researcher served the questionnaires to the drivers depending on the traffic conditions of the road.

3.5 Research Instruments

Instruments were developed so as to collect the necessary information needed in this case, the instruments considered for the study were questionnaires which were printed questions. The research involves the collection of constructs. These are non-observable inferences from observed behavior. Rating scales is quite suitable for measuring the constructs (Kothari, 2001).

3.6 Instruments of Data Collection

Burns and Grove (2009) define data collection as a systematic way of gathering information that has significance in the study being carried out with regards to the study objectives or questions. Research instruments are tools used in data collection in a study (Chandran, 2004). Mugenda and Mugenda (2003), assert that studies must have instruments that they will use to collect the required information. This study will use primary data collected using semi-structured questionnaires.

Lavrakas (2008) asserts that in a questionnaire that is used for research purposes, the questions and statements therein should be directly concerned with answering the research questions of the study. When a researcher is creating the study questionnaire, they are required to identify the study variables and then give an operational definition for them. Further, Newing (2011), reports that a questionnaire should be

made up of specific, brief and precise statements or questions which can be asked orally by the interviewer or be filled out by the respondents themselves, in this case, this is known as a self-administered questionnaire. Questionnaires are instrumental in research since they are capable of gathering information about the respondents' emotions, feelings, successes, experiences and attitudes of the respondents which cannot be directly observed (Sustrina, 2009). They are also cheaper and non-time consuming and are therefore suitable for collecting data that is unbiased.

3.7 Reliability of the Research Instrument

Cronbach (1951) refers to reliability as how consistent a group of measurements items are; therefore, reliability refers to how consistent and instrument is in its measurements and the level to which that instrument can replicated the same results with similar subjects under similar conditions. Consequently, it refers to how repeatable a measurement is. An instrument of measurement is referred to reliable if a respondent scores the same score if given the test twice.

Internal consistency is a measure of the relationship between different variables in the same study. According to Castillo (2009) a score of less than 0.9 means that the consistency is excellent, that of less than 0.8 means that it is good, less than 0.7 means acceptable less than 0.6 means questionable, less than 0.5 and below is described as poor. This study will use 0.7 as the minimum measure of reliability in this study. The reliability results indicated that an overall Cronbach Alpha coefficient of 0.874 was obtained in the study, which meant the questionnaire was generally reliable for data collection.

3.8 Data Collection Techniques

Data was collected using a questionnaire in the study. The researcher moved to various destinations in Nairobi conducting the research by administering the questionnaire. Two research assistants were used to collect data from the matatus where they filled in the questionnaires as they were answered by the operators.

3.9 Data Analysis and Presentation Techniques

Quantitative data was gathered using questionnaires in the study. Data from the questionnaires was coded and cleaned using SPSS. It was then analyzed by use of descriptive statistics (frequencies and percentages) and inferential statistics

(correlations and linear regression) which were used to determine whether there were significant association/linear relationships between the predictors and the outcome variable.

3.9.1 Logistical and Ethical Considerations

Before data collection, a permit was sorted from the Ministry of Transport. On production of the research permit, the researcher was allowed to carry out the research. The researcher will also adhere strictly to the following ethical principles; ensuring the anonymity and confidentiality of the respondents and responses, seeking for consent from all participant and being fair to all respondents; this will be ensured by allowing those respondents that are not comfortable with the study not to participate.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This is the chapter where the field data that was collected has been analyzed, presented and interpreted. The process of analyzing the data, presenting and interpreting has been done as set out in the research methodology and guided by the research objectives. The findings presented in this chapter were based on the transportation vision of the Nairobi Metropolitan Area focusing on the withdrawal of the 14 seater Matatus as the case study. The study used questionnaires in collecting the data also designed on the basis of the research objectives.

4.2 Response Rate

The study selected a sample of 120 matatu operators for data collection in relation to the study title on the withdrawal of the 14 seater matatu. Out of the one hundred and twenty (120) questionnaires distributed to the matatu operators in Nairobi, one hundred (102) questionnaires were successfully filled and returned. Hence, the study achieved a response rate of 83% hence this rate was sufficient sample to provide reliability to the findings as Cooper and Schindler (2011) points that if the response rate is 60% and above then the social scientific study can proceed. The response rate is shown in Table 4.1.

Table 4.1: Response Rate

Response	Frequency	Percentage
Responded	100	83%
Not responded	20	17%
Total	120	100

Source: Author, 2017

4.3 Demographic Information

The study sought to determine the demographic information of the respondents who took part in the study. The demographic information sought was the gender of respondents, their age, education level, length of business, their designation, distance of matatu operation and the matatu ownership.

4.3.1 Gender of Respondent

On the gender distribution of the respondents, 98% of the operators who participated were males, while only 2% of them were females. The findings of the study imply that nearly all the operators of matatu in Nairobi are male. Further, this shows more males than females are willing to work as operators on ever busy transportation sector in Nairobi and the males have much proven that the job is tougher to be done by the women every day.

4.3.2 Age of Respondent

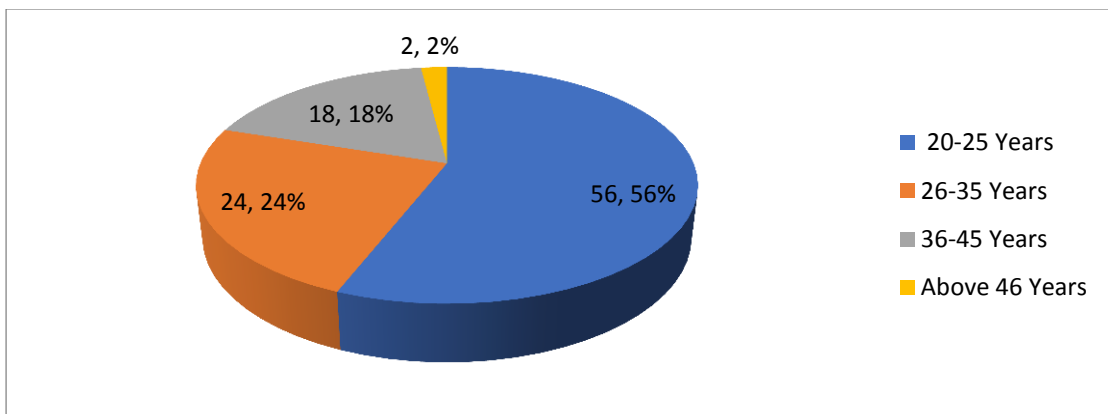


Figure 4.1 Age of Respondents

Source: Field Work, 2017

The findings of the study revealed that 56% of the respondents were aged 20-25 years, 24% were aged 26-35 years, 18% were aged and 2% were aged more than 46 years. The findings imply that most matatu operators were young as compared to the aged. Then findings are shown in Figure 4.1.

4.3.3 Level of Education

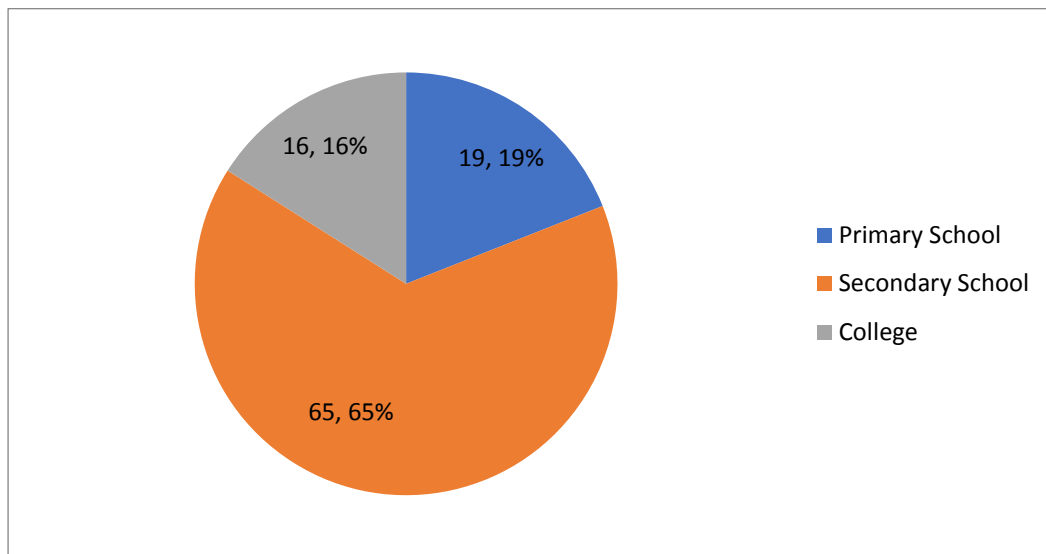


Figure 4.2 Level of Education

Source: Field Work, 2017

The study sought to investigate the education level achieved by the respondents. The study also recognized the fact that education level informs certain decisions in a community and a country as a whole for e.g. in Kenya one must have attained a minimum age of 18 years to acquire a driving license, and the results revealed that 19% of the respondents had gone to primary school as the highest level of education attained, 65% of the respondents indicated that the highest level of education attained was secondary school, while 16% of the respondents indicated that they had undergone college education. This further reveals that drivers and conductors had good educational qualifications (upper primary and secondary school education).

4.3.4 Length of Business

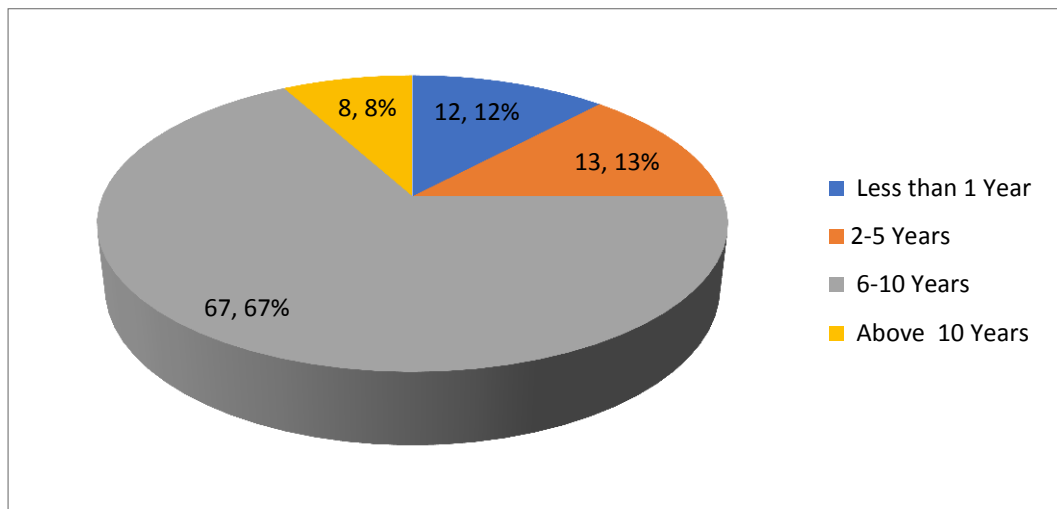


Figure 4.3 Length of Business

Source: Field Work, 2017

The findings indicate that 67% of the businesses had operated for 6-10 years, 13% had operated for 2-5 years, 12% had operated for less than a year while 8% had operated for more than 10 years. The findings imply that most businesses had been in existence for some time now as they had operated for between 5 and 10 years.

4.3.5 Designation of Respondent

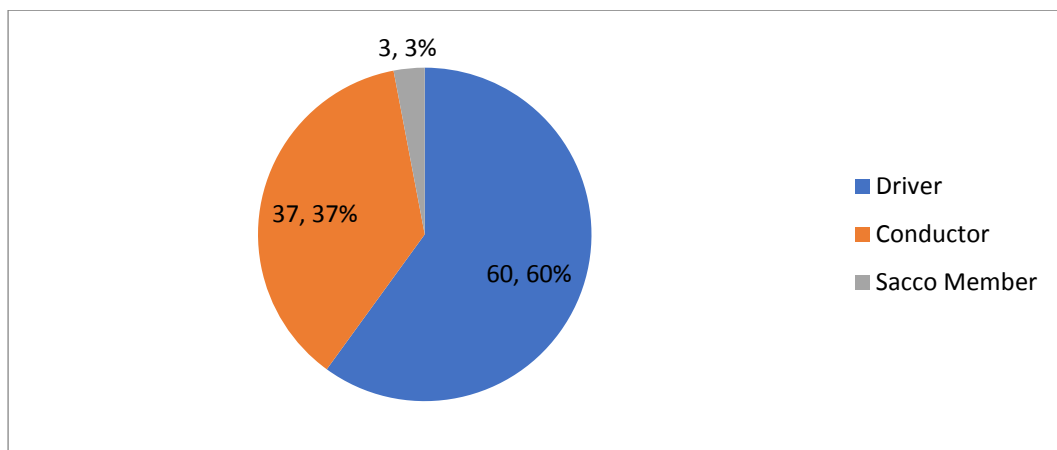


Figure 4.4 Length of Business

Source: Field Work, 2017

The study revealed that 60% of the respondents were drivers and 37% were conductors while 3% were Sacco members. This shows that more drivers were willing

to give information than the conductors who were busier looking for passengers, the drivers were rather easy to reach for they were being interviewed from their seats without movement as they either waited for the vehicles to be presented to the passengers in the queue or waited for the vehicles to get filled once on the frontline.

4.3.6 Distance from the Job Route to the City Centre

Table 4.2 Distance from the Job Route to the City Centre

Kilometres from job route to Nairobi city Centre	Frequency	Percent
More than 20km	5	5%
16-20km	22	22%
11-15km	41	41%
6-10km	17	17%
Less than 5km	15	15%
Total	100	100%

Source: Field Work, 2017

The study wished to establish the distance in kilometres that was travelled by the vehicle from the area of job route to the Nairobi city Centre as indicated in the table 4.2. The findings indicate that majority of the respondents (41%) indicated that the distance in kilometres that was travelled by the vehicle from the area of job route to the Nairobi city Centre was between 11 and 15km, another 22% of the respondents indicated a distance of 16 and 20km, 17% of them indicated 6-10km, another 15% of the respondents indicated less than 5km, while 5% of the respondents indicated the distance travelled was more than 20km.

4.3.7 Matatu Operation Frequency

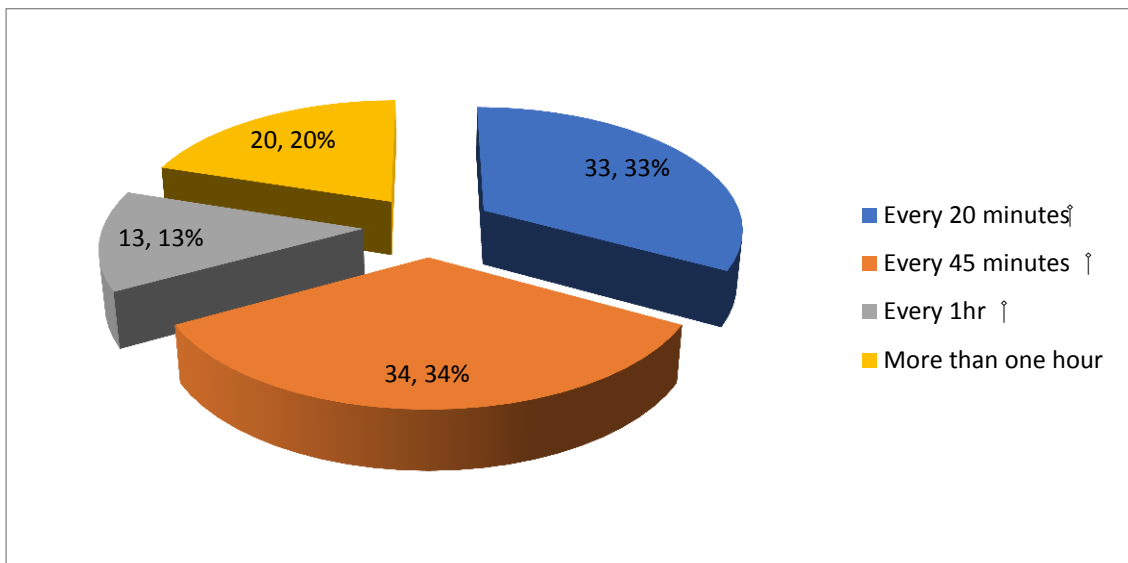


Figure 4.5 Frequency of Public Service Vehicle Matatus in the Route

Source: Field Work, 2017

The study further sought to establish the frequency of public service vehicle matatus in the routes sampled. From the findings 34% of the respondents indicated that the frequency of public service vehicle matatus in their routes was every 45 minutes, 33% of the respondents indicated every 20 minutes, another 20% of the respondents indicated every one hour, while 13% of the respondents indicated that the frequency of public service vehicle matatus in their routes was more than 1 hour.

This is in contrary with a study done by NMGS BRT Solutions (2006) who found that the commuters and their operators suffer a lot from the effects of the traffic jams in Nairobi as they take a lot of time to get to their destinations. At the same time the commuters as well as the crews are in most cases exposed to numerous criminal activities from pick pockets and carjacking along the road while stuck in the jams which in some cases leads to health related emergencies. Studies done in the past found that approximately Kshs. 1.89 billion is lost annually due to congestion on the Kenyan roads.

4.3.8 Ownership of the Vehicles

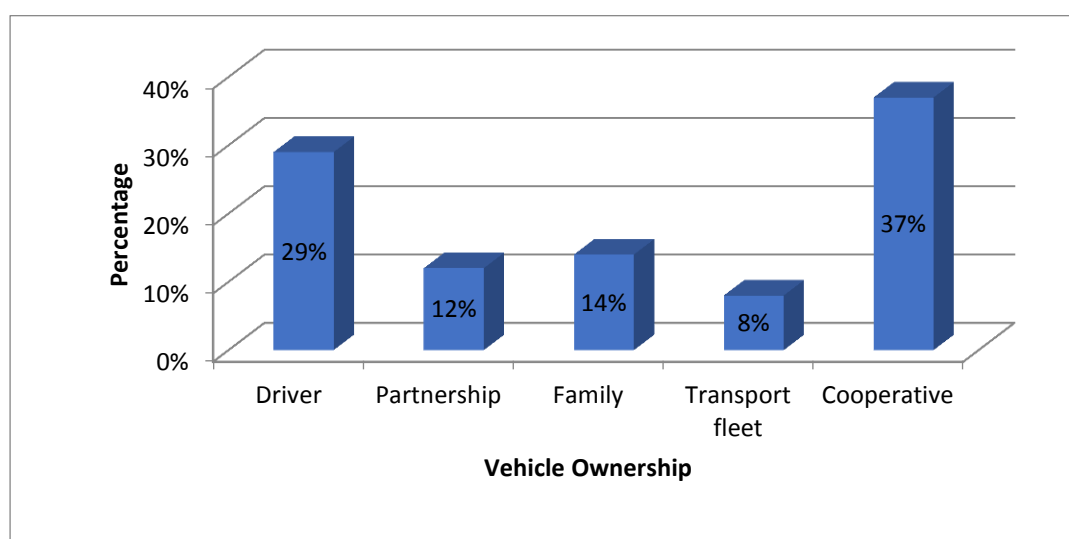


Figure 4.4: Vehicle Ownership

Source: Field Work, 2017

Of all the vehicles that their operators were interviewed, 37% of the vehicles belonged to the cooperatives, 29% belonged to drivers, 14% was a family business, 12% were partnerships and 8% were held by transport fleets. This implies that the implementation of rules for joining into Sacco association of all the 14 seater matatu will need little adjustment and agreement of the owners of the vehicle and there was evident that it could work.

4.4 Descriptive Statistics on Objectives

4.4.1 Withdrawal of 14 Seater Matatus and Traffic Decongestion

The first objective of the study was to find out how the removal of the 14 seater matatus would help in traffic decongestion in the city Nairobi City County. The findings of the study are shown in Table 4.3.

Table 4.3 Descriptive Statistics on Withdrawal of 14 Seater Matatus

Factor		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Withdrawal of 14 seater matatus will reduce traffic jams	Percentage (%)	12%	10%	18%	46%	14%	100%
Withdrawal of 14 seater matatus will reduce pollution in the city	Percentage (%)	0%	7%	17%	70%	6%	100%
Withdrawal of 14 seater matatus will reduce time wastage	Percentage (%)	2%	4%	25%	62%	7%	100%
Withdrawal of 14 seater matatus will lead to the loss of employment by drivers	Percentage (%)	16%	15%	17%	47%	5%	100%
Withdrawal of 14 seater matatus will affect the cost of transport in the city	Percentage (%)	1%	4%	17%	63%	14%	100%

Source: Field Work, 2017

The findings indicate that the majority of the respondents agreed that withdrawal of 14 seater matatus will reduce traffic jams forming 46% of the responses, 14% strongly agreed while 18% neither agreed nor disagreed. 70% agreed that withdrawal of 14 seater matatus will reduce pollution in the city, 6% strongly agreed while 17% neither agreed nor disagreed. The findings also indicate that 62% agreed that withdrawal of 14 seater matatus will reduce time wastage, 47% agreed that withdrawal of 14 seater matatus will lead to the loss of employment by drivers and 63% agreed that

withdrawal of 14 seater matatus will affect the cost of transport in the city. The findings are presented in Table 4.3.

The study agrees with Ogonda (1992) who stated that in 1973, the for the transport system and development direction of the use of land in Nairobi City was formulated in Nairobi Metropolitan Growth Strategy but since then, there is no detailed plan nor revision of the same nor has it been implemented. The Nairobi Metropolitan area is also concentric in structural design comprising of radial transport corridors which makes it difficult to move around also compounded with the location of most of the work places within the City and the CBD. The sector also faces very stiff competition due to the limited parking spaces and road reserves within Nairobi CBD because much the spaces within Nairobi CBD are used as parking areas and the roads also end up being swallowed by the many vehicles plying the city's routes. The commuters have also added to the challenge whereby they park their private cars in the CBD or any available parking space. The transport problem can be reduced greatly if the 14 seat matatu is replaced with the 25 seat matatu which is a greater effort in reducing the congestion in the city (Smith, 1989).

4.4.2 Influence of the Road Sub Sector Reforms on Traffic Decongestion

The study also sought to determine the influence of road sub sector reforms on traffic decongestion. The findings are shown in Table 4.4.

Table 4.4 Descriptive Statistics on Road Sub Sector Reforms

Factor		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Road subsector reforms will ease traffic jams in the city	Percentage (%)	0%	1%	9%	58%	32%	100%
Road subsector reforms will lead to better quality roads	Percentage (%)	0%	0%	8%	61%	31%	100%
Road subsector reforms will increase the regulation of the transport industry	Percentage (%)	0%	2%	9%	78%	11%	100%
Road subsector reforms will cause the loss of jobs	Percentage (%)	2%	6%	20%	54%	18%	100%
Road subsector reforms will increase the cost of transport	Percentage (%)	0%	3%	23%	65%	9%	100%

Source: Field Work, 2017

The findings indicate that 58% agreed that road subsector reforms will ease traffic jams in the city, 61% agreed that road subsector reforms will lead to better quality roads, 78% agreed that road subsector reforms will increase the regulation of the transport industry, 54% agreed that road subsector reforms will cause the loss of jobs and 65% agreed that road subsector reforms will increase the cost of transport.

The findings of the study agree with those of Ogonda (1992) who stated that, as a rapid measure, the government of Kenya imposed a regulation banning the importation and registration of 14 seater Matatu vehicles in the Country. This regulation has taken effect from January 2011. As a consequence, the stakeholders in the transport sector have taken some strategic responses to cope and adapt with this change in the transport system. The matatu industry has not had many questions on the implementation of the changes ever since they were proposed more so because

they are perceived to have a direct impact on the industry owners as well as the crew. It has also been established that the transition interval and time into the new system will be a big challenge to the owners and the staff. The stakeholders in the transport sector have adopted various strategic responses towards the ban of 14 seater Matatus.

4.4.3 Impact of the Replacement of 14 Seater Matatus with Higher Capacity 29 Seater Vehicles on Traffic Decongestion

The study further sought to determine the impact of the replacement of 14 seater matatus with higher capacity 29 seater vehicles on traffic decongestion. The findings are shown in Table 4.5.

Table 4.5 Descriptive Statistics on Introduction of Higher Capacity Vehicles

Factor	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Introduction of high capacity vehicles will reduce traffic jams (%)	10%	1%	20%	69%	0%	100%
Introduction of high capacity vehicles will reduce pollution in the city (%)	2%	1%	14%	35%	48%	100%
Introduction of high capacity vehicles will reduce time wastage (%)	0%	3%	14%	66%	17%	100%
Introduction of high capacity vehicles will lead to the loss of employment by drivers (%)	1%	2%	15%	47%	35%	100%
Introduction of high capacity vehicles will affect the cost of transport in the city (%)	14%	20%	19%	36%	11%	100%

Source: Field Work, 2017

The findings indicate that 69% of the respondents agreed that introduction of high capacity vehicles will reduce traffic jams, 48% strongly agreed that introduction of high capacity vehicles will reduce pollution in the city, 66% agreed that introduction of high capacity vehicles will reduce time wastage, 47% agreed that introduction of high capacity vehicles will lead to the loss of employment by drivers and 36% agreed that introduction of high capacity vehicles will affect the cost of transport in the city. The findings are presented in Table 4.5.

The findings obtained are in line with those of Thoopal (2000) and Wright (1993) who argued that higher capacity vehicles likelihood would influence most governments to intervene by controlling prices.

4.4.4 Other Suggestions Regarding Public Transport in Nairobi

The study sought the respondents' suggestion regarding public transport in Nairobi. From the study, the respondents suggested that the government should regulate the oil prices, it should also ensure security measures are taken seriously and that the government should also ensure that policies on expansion of roads are implemented. The respondents also reiterated that police and city council should avoid harassing operators, parking spaces should be made enough in town and that the transport licensing board should implement effective strategy.

4.5 Inferential Statistics

The study conducted correlation and regression analysis to help determine the relationship between the study variables. The findings are presented in this section.

4.5.1 Correlation Analysis

To analyze the relationships and the strength of the dependency between the dependent and variables, the study correlated the independent variables and the dependent variable of the study. The findings obtained in the study, shown in Table 4.6, indicate that withdrawal of 14 seater matatu has a positive and significant association with decongestion in Nairobi. A strong correlation was obtained between withdrawal of 14 seater matatu and decongestion with a Pearson's correlation coefficient value of 0.757 and a significant value of 0.000 which is less than 0.025 the critical value at the 5% level of significance. Also, road sub sector reforms showed a

moderate positive influence on decongestion with a Pearson correlation coefficient of 0.684 and a significant value of 0.000. In addition, introduction of higher capacity vehicles showed a strong positive correlation with decongestion with a Pearson correlation coefficient of 0.704 and a significant value of 0.000.

Table 4.6 Correlation Analysis Results

		Decongestion
Organizational performance	Pearson Correlation	1
	Sig. (2-tailed)	
	N	100
Withdrawal of 14 seater Matatus	Pearson Correlation	.757**
	Sig. (2-tailed)	.000
	N	100
Road sub sector Reforms	Pearson Correlation	.684**
	Sig. (2-tailed)	.000
	N	100
Higher Capacity Vehicles	Pearson Correlation	.874**
	Sig. (2-tailed)	.000
	N	100

** Correlation is significant at the 0.01 level (2-tailed).

Source: Research Data (2017)

4.5.2 Regression Analysis

To determine the relationship between the independent variables and the dependent variable, the study conducted regression analysis. The study found that withdrawal of 14 seater matatus, road sub sector reforms and higher capacity vehicles explained a significant proportion of variance in organizational performance, $R^2 = .695$. This implies that 69.5% of the proportion in decongestion could be explained by withdrawal of 14 seater matatus, road sub sector reforms and higher capacity vehicles. Other factors not covered by this study therefore contribute to 30.5%. Findings are as shown in Table 4.7.

Table 4.7 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.834 ^a	.695	.685	.300
a. Predictors: (Constant), withdrawal of 14 seater matatus, road sub sector reforms, higher capacity vehicles				

Source: Research Data (2017)

The findings indicate that the significance value in testing the reliability of the model for the relationship between withdrawal of 14 seater matatus, road sub sector reforms and higher capacity vehicles and decongestion was $F = 70.555$, $p = 0.00$. Therefore the model is statistically significant in predicting the relationship between the study variables. Results are as presented in Table 4.8.

Table 4.8 ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.055	3	6.352	70.555	.000 ^b
	Residual	8.372	96	.090		
	Total	27.427	99			

a. Dependent Variable: Organizational Performance

b. Predictors: (Constant), Structural Capability, Operational Capability, Staff Capability

The study found that withdrawal of 14 seater matatus, road sub sector reforms and higher capacity vehicles significantly predicted organizational, $\beta = .279$, $t = 2.856$, $p = .005$; $\beta = .170$, $t = 2.010$, $p = .047$; and $\beta = .458$, $t = 4.294$, $p = .000$ respectively since the p value was less than $<.05$ set by the study.

Table 4.9 Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.451	.244		1.853	.067
	Withdrawal of 14 seater matatus	.282	.099	.279	2.856	.005
	Road sub sector reforms	.162	.081	.170	2.010	.047
	Higher capacity vehicles	.466	.108	.458	4.294	.000

a. Dependent Variable: Organizational Performance

Source: Research Data (2017)

The multiple regression values in the table indicated that all the variables, that is, withdrawal of 14 seater matatus, road sub sector reforms and higher capacity studied have a positive and significant influence on decongestion in Nairobi. This is because all predictor variables values were positive. In addition, Table 4.8 above shows that taking all the factors into account, that is, withdrawal of 14 seater matatus, road sub sector reforms and higher capacity vehicles representing the independent variables, then an improvement in withdrawal of 14 seater vehicles will lead to 0.282 (28.2%) increase in decongestion; a unit increase in road sub sector reforms increases decongestion by 0.162 (16.2%) and an improvement in introduction of higher capacity vehicles enhances decongestion in Nairobi by 0.466 (46.6%).

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This is the final chapter in this study which summarizes the findings presented in chapter four, gives conclusions of the study and makes recommendations based on the results of the study. The chapter has been presented in terms of the study objectives which are finding out if the removal of the 14 seater will help in traffic decongestion in the city, to examine the road sub sector and their goals towards improvement of transport sector towards the transportation vision in Nairobi and to investigate the impact of the higher capacity Vehicles which will replace the 14 seater matatus.

5.2 Summary of Findings

This section has been organized into objectives of the study

5.2.1 Removal of the 14 seater Matatu

The findings indicated that the majority of the respondents agreed that withdrawal of 14 seater matatus will reduce traffic jams forming, withdrawal of 14 seater matatus will reduce pollution in the city, withdrawal of 14 seater matatus will reduce time wastage, withdrawal of 14 seater matatus will lead to the loss of employment by drivers and that withdrawal of 14 seater matatus will affect the cost of transport in the city. The study also found a significance influence of withdrawal of 14 seater matatus on decongestion in Nairobi.

5.2.2 Road Sub Sector Reforms

The findings indicated that most of the respondents agreed that road subsector reforms will ease traffic jams in the city, road subsector reforms will lead to better quality roads, road subsector reforms will increase the regulation of the transport industry, road subsector reforms will cause the loss of jobs and that road subsector reforms will increase the cost of transport. The study also found a significance influence of road sub sector reforms on decongestion in Nairobi.

5.2.3 Introduction of Higher Capacity Vehicles

The findings indicated that majority of the respondents agreed that introduction of high capacity vehicles will reduce traffic jams, introduction of high capacity vehicles will reduce pollution in the city, introduction of high capacity vehicles will reduce time wastage, introduction of high capacity vehicles will lead to the loss of employment by drivers and that introduction of high capacity vehicles will affect the cost of transport in the city. The study also found a significance influence of higher capacity vehicles on decongestion in Nairobi.

5.3 Conclusions

The study concludes that more drivers contribute to the transport vision than the conductors. Further, the distance in kilometres that is travelled by vehicles in the Metropolitan area of job route to the Nairobi city centre is short and that mainly the frequency of public service vehicle matatus in their routes was less than 1 hour.

The study also concludes that majority of the vehicles plying Nairobi city belong to the cooperatives. Further, among the projects that should be prioritized in the area include regular maintenance of roads by the roads sub sectors, expansion of public roads in Nairobi, licensing board to improve their services and improvement of security on the roads.

The study also concluded that withdrawal of the 14 Seater Matatus would lead to unemployment, reduction of road accidents, better security and insurance of vehicles through Sacco and less congestion. Further, the reforms will reduce road accidents; others indicated that it will create employment, while others indicated that transport sector will be more organized. The reforms of the road sub sectors will also help build the transport vision in Nairobi. In addition, the introduction of higher capacity vehicles will contribute to decongestion in Nairobi City.

5.4 Recommendations

From the study findings and conclusions, the transportation vision for the Nairobi Metropolitan Area has triggered various feelings and views among the stakeholders in the sector especially with the withdrawal of the 14 seater Matatus.

So far the efforts that have been made by the government in the matatu industry regulation are been found to be commendable though the efforts need to be strengthened in other ways. Further there is need to have one or formalized institutions such as Kenya Transport Licensing Board dealing in the provision of the licenses for vehicles instead of having numerous organizations which may be engaging in fraudulent activities. Further there is need to comprehensive training of the traffic police officers and ensure effective transfer of the skills acquired in their work which should be complemented with better remuneration.

It is also recommended that the traffic police officers should be separated from those who are perceived to be corrupt and they be transferred to other major institutions which deals with the PSV services. The study also recommends that the Matatus owners and their staff should be involved in the discussions and decisions in their industry by strengthening their capacity in order for them to ensure that the industry is well managed. The relevant authorities and stakeholders should focus on ensuring that there is improvement on the terms and conditions under which the employee's work through collective ownership of the functions of the industry and operations of the PSV. Some of the Saccos have been doing well by offering their members credit facilities, purchasing vehicles for them, even having centralized programmes for their repairs and maintenance of their vehicles and managing their routes and the fares charged by their crews.

The study also recommends that through reduction of the age limit from 8 to 5 years of importation of new vehicles, reduction in the cost of insurance and reduction in the cost of buying and operating the PSV, competition in the industry will be effectively reduced. This is also clear that there is need to regulate the activities of the institutions charged with training of PSV drivers together with related support initiatives and standards through the vehicle owners association, insurance firms and NGOs laying emphasis on issues of road safety. Furthermore the training courses offered by the driving schools should be coordinated by one body with a common curriculum which should also come up with strategies of standardizing examination and certification of all drivers in order to promote adherence to standards.

The study finally recommends that the relevant authorities and stakeholders should focus in ensuring that there is improved terms and work conditions for all the staff

working in that industry by having a collective operation and ownership of the PSVs. This should be done through effective collection and documentation of data for the routes, the number of vehicles in a given route, the habits and number of the owners and crew together with the fares they charge among many others.

Further there is need to give comprehensive training of the traffic police officers and ensure effective transfer of the skills acquired in their work which should be complemented with better remuneration. It is also recommended that the traffic police officers should be separated from those who are perceived to be corrupt and they be transferred to other major institutions which deals with the PSV services.

Finally it was recommended that the Matatu owners and their staff should be represented by the civil society organizations to facilitate discussions and decision making in the industry which will offer them an opportunity to strengthen their capacity for effective management of the affairs of the industry and enhance self-regulation. Some of the Saccos have been very supportive to their members by offering services such as credit facilities, purchasing on behalf of the members, having programmes for repairs and maintenance of the vehicles in specific petrol stations and garages. Some even have their own fuelling stations and garages.

5.5 Suggestions for Further Research

The study has investigated the transportation vision for the Nairobi Metropolitan area using a case study of withdrawal of the 14 seater matatu. The Matatu industry in Kenya however comprises of various areas where the withdrawal of 14 seater matatus is felt and thus the concerned stakeholders are likely to express their feelings on the transport vision in those areas. Therefore there is need for a similar study to be done that covers the whole of the matatu industry in Kenya which will provide a general understanding of all the issues in the industry where the 14 seater matatus business is one of the methods of transport. This will give way for the implementation of the new policies that have been proposed especially on the transportation vision with the withdrawal of the 14 seater matatus in Kenya.

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APPENDICES

Appendix A: Letter of Introduction to Respondents

Johnson Chaw

University of Nairobi

P.O Box 021838-00505

NAIROBI.

Dear Sir/Madam,

RE: QUESTIONNAIRE ON TRANSPORT VISION FOR THE NAIROBI METROPOLITAN AREA

I am a Master's student at the University of Nairobi, Geography Department carrying out a research on the above topic. I kindly request you to assist me by filling in the questionnaires enclosed herein as correct and honest as possible.

I so assure you of **utmost confidentiality** to both your identity and answers. Information obtained shall strictly be used for the purpose of this research only.

Thanks in advance for your willingness to participate in this important exercise in advance.

Yours Sincerely

JOHNSON CHAW.

Appendix B: Operators' Questionnaire

This questionnaire is for the purpose of research as explained in the introductory letter. Please note that the information given here will be kept strictly confidential. Respond to the questions as honest as possible. Do not indicate your name or any other form of identification anywhere in this questionnaire.

SECTION A: Personal data.

Please indicate the correct option by ticking $\{\sqrt{\}$ in the box provided. For any structured question use the space provided.

SECTION A: Demographic information

What is your gender?

- a) Male []
- b) Female []

What is your age bracket?

- a) 20-25 Years []
- b) 26-35 Years []
- c) 36-45 Years []
- d) Above 46 Years []

What is your academic background level?

- a) Primary Level []
- b) Secondary Level []
- c) College Level []
- d) University Level []
- e) Other [Specify].....

How long has your business been working?

- a) Less than 1 Year []
- b) 2-5 Years []
- c) 6-10 Years []
- d) Above 15 Years []

What's your designation?

- a) Driver
- b) Conductor
- c) Sacco Member/Owner

What's the distance in kilometres from the job route to the city centre?**How often does the public service vehicle matatus operate in your job route area run?**Every 20 minutes ☐ ☐Every 45 minutes ☐ ☐Every 1hr. ☐ ☐**Is the vehicle owned by (please tick):**Driver ☐ Transport fleet ☐ Family ☐ Partnership ☐ Cooperative ☐ ☐Local businessman ☐ ☐ Other.....**SECTION B: WITHDRAWAL OF 14 SEATER MATATUS**

In the scale of 5=Strongly Disagree, 4=Disagree, 3=Neutral, 2=Agree, 1=Strongly Agree, to what extent does withdrawal of 14 seater matatus influence congestion in Nairobi County?

Withdrawal of 14 Seater Matatus	1	2	3	4	5
Withdrawal of 14 seater matatus will reduce traffic jams					
Withdrawal of 14 seater matatus will reduce pollution in the city					
Withdrawal of 14 seater matatus will reduce time wastage					
Withdrawal of 14 seater matatus will lead to the loss of employment by drivers					
Withdrawal of 14 seater matatus will affect the cost of transport in the city					

SECTION C: ROAD SUB-SECTOR REFORMS

In the scale of 5=Strongly Disagree, 4=Disagree, 3=Neutral, 2=Agree, 1=Strongly Agree, to what extent does security sector reforms affect business security?

Road Subsector reforms	1	2	3	4	5
Road subsector reforms will ease traffic jams in the city					
Road subsector reforms will lead to better quality roads					
Road subsector reforms will increase the regulation of the transport industry					
Road subsector reforms will cause the loss of jobs					
Road subsector reforms will increase the cost of transport					

SECTION D: INTRODUCTION OF HIGHER CAPACITY VEHICLES

In the scale of 5=Strongly Disagree, 4=Disagree, 3=Neutral, 2=Agree, 1=Strongly Agree, to what extent does withdrawal of 14 seater matatus influence congestion in Nairobi County?

Introduction of high capacity vehicles	1	2	3	4	5
Introduction of high capacity vehicles will reduce traffic jams					
Introduction of high capacity vehicles will reduce pollution in the city					
Introduction of high capacity vehicles will reduce time wastage					
Introduction of high capacity vehicles will lead to the loss of employment by drivers					
Introduction of high capacity vehicles will affect the cost of transport in the city					

Other Suggestions Regarding Public Transport in Nairobi

.....
.....

THANK YOU

Appendix C: Research images

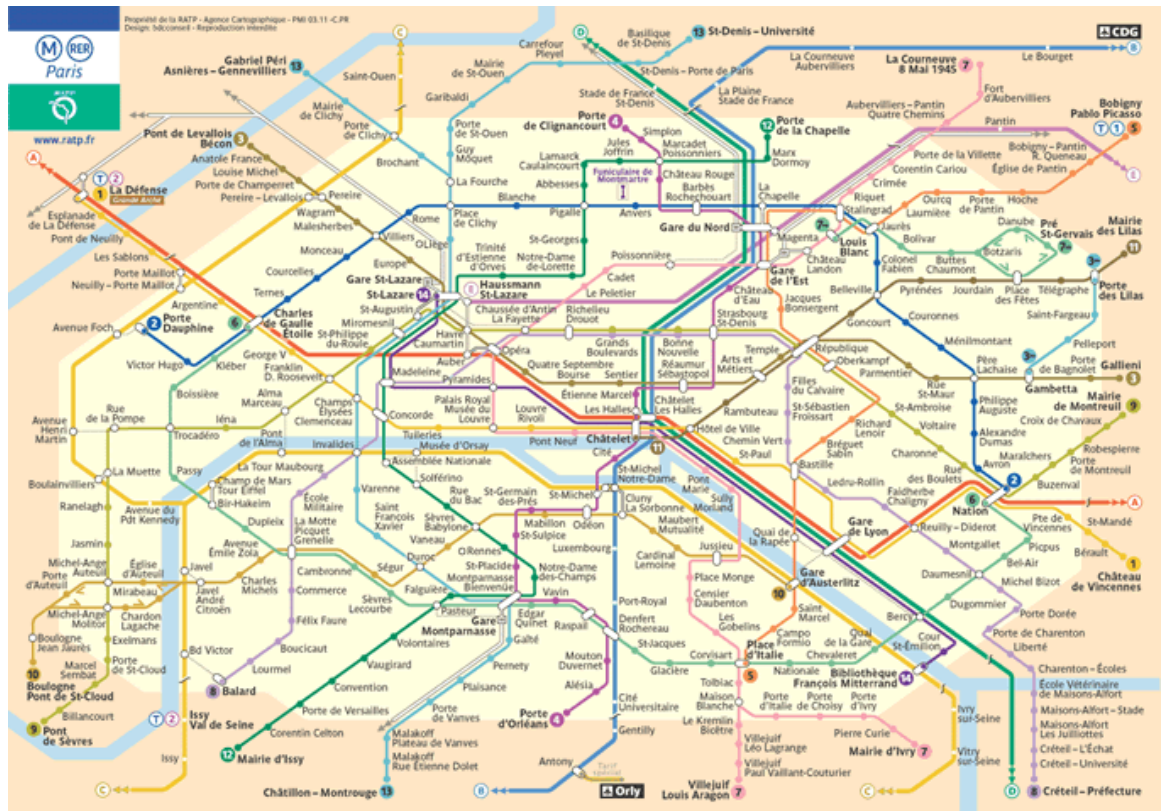


Courtesy:

<https://nairobiplanninginnovations.files.wordpress.com/2012/06/traffic-jam.jpg?w=595> BRT



Appendix D: Research Supporting Documents and maps



Courtesy images: parisien tansport sysyems (RTP)



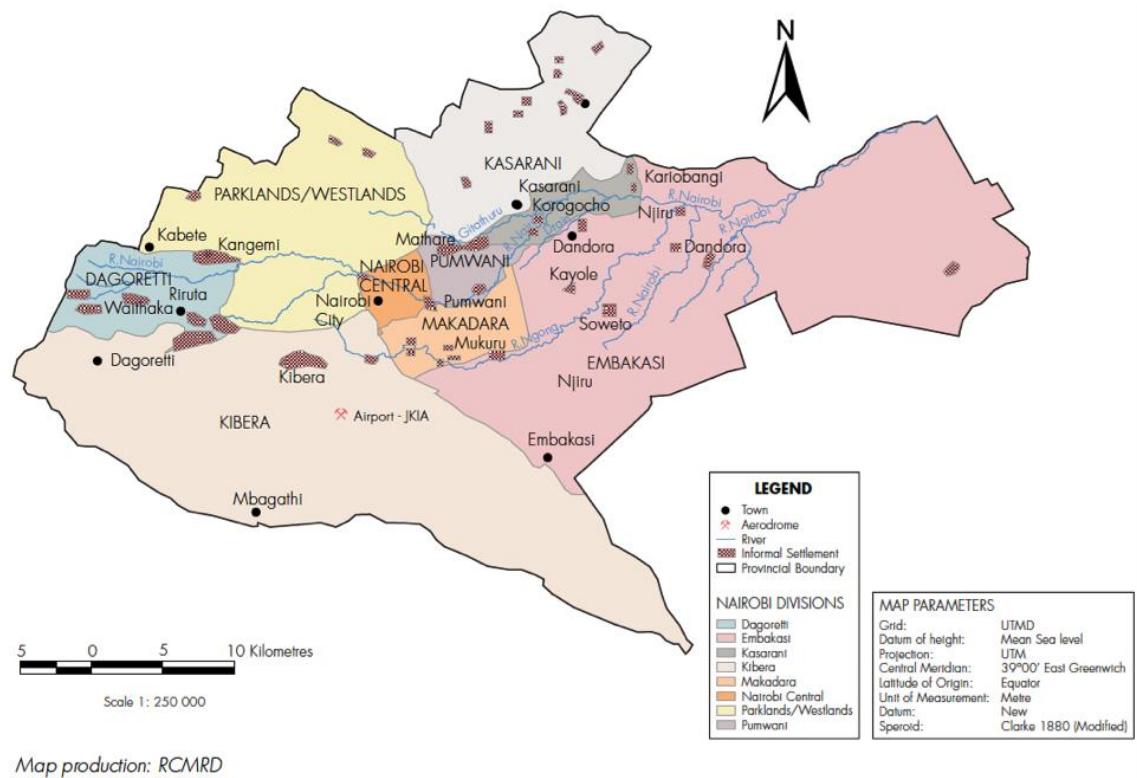
Courtesy of google maps.

Nairobi major roads



Courtesy of loneymaps.com/google/Nairobi/routes

Nairobi county Map



Research area map courtesy RCMRD

Appendix E

Turnitin *Originality Report*

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POTENTIAL IMPACT OF THE WITHDRAWAL OF 14 SEAT... By *Johnson Chaw*

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Appendix F: Letter of Authorization from NACOSTI



NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: 020 400 7000,
0713 788787, 0735404245
Fax: +254-20-318245, 318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref.No. **NACOSTI/P/17/99289/19123**

Date: **10th October, 2017**

Manyang Johnson Chaw
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on *“Transportation vision for the Nairobi Metropolitan Area: Case study of withdrawal of the 14 sitter. matatu phase out in regard to decongestion as research on the impact”* I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **9th October, 2018.**

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.

Appendix G: Declaration of Originality Form

Declaration Form for Students

UNIVERSITY OF NAIROBI

Declaration of Originality Form

This form must be completed and signed for all works submitted to the University for examination.

Name of Student:	MANYANG JOHNSON CHAW
Registration No:	CS0/60025/2010
College:	(CHSS) COLLEGE OF HUMANITIES AND SOCIAL SCIENCES
Faculty/School/Institute:	ARTS
Department:	GEOGRAPHY & ENVIRONMENTAL STUDIES
Course Name:	TRANSPORT GEOGRAPHY
Title of the work:	MVA TRANSPORTATION VISION FOR THE NAIROBI METROPOLITAN AREA. CASE STUDY OF WITHDRAWN OF THE 14 SECTOR MATATHI

DECLARATION

1. I understand what Plagiarism is and I am aware of the University's policy in this regard.
2. I declare that this THESIS (Thesis, project, essay, assignment, paper, report etc) is my original work and has not been submitted elsewhere for examination, award of a degree or publication. Where other people's work, or my own work has been used, this has properly been acknowledged and referenced in accordance with the University of Nairobi's requirements.
3. I have not sought or used the services of any professional agencies to produce this work.
4. I have not allowed, and shall not allow anyone to copy my work with the intention of passing it off as his/her own.
5. I understand that any false claim in respect of this work shall result in disciplinary action in accordance with University Plagiarism Policy.

Signature: [Signature]

Date: 14/09/2017

Appendix H: Research Permit

THIS IS TO CERTIFY THAT:
MR. MANYANG JOHNSON CHAW
of UNIVERSITY OF NAIROBI, 21838-505
NAIROBI, has been permitted to conduct
research in *Nairobi County*


Permit No : NACOSTI/P/17/99289/19123
Date Of Issue : 10th October, 2017
Fee Received : Ksh 2000

on the topic: **TRANSPORTATION VISION
FOR THE NAIROBI METROPOLITAN AREA:
CASE STUDY OF WITHDRAWAL OF THE
14 SEATER. MATATU PHASE OUT IN
REGARD TO DECONGESTION AS
RESEARCH ON THE IMPACT**



for the period ending:
9th October, 2018


.....
Applicant's
Signature

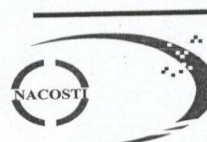

.....
Director General
National Commission for Science,
Technology & Innovation

CONDITIONS

1. The License is valid for the proposed research, research site specified period.
2. Both the Licence and any rights thereunder are non-transferable.
3. Upon request of the Commission, the Licensee shall submit a progress report.
4. The Licensee shall report to the County Director of Education and County Governor in the area of research before commencement of the research.
5. Excavation, filming and collection of specimens are subject to further permissions from relevant Government agencies.
6. This Licence does not give authority to transfer research materials.
7. The Licensee shall submit two (2) hard copies and upload a soft copy of their final report.
8. The Commission reserves the right to modify the conditions of this Licence including its cancellation without prior notice.



REPUBLIC OF KENYA



National Commission for Science,
Technology and Innovation

**RESEARCH CLEARANCE
PERMIT**

Serial No.A 16046

CONDITIONS: see back page